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SMALL GRAIN VARIETY TRIALS IN WEST VIRGINIA, 1959-1965



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WEST VIRGINIA UNIVERSITY
AGRICULTURAL EXPERIMENT STATION
COLLEGE OF AGRICULTURE AND FORESTRY
A. H. VANLANDINGHAM, DIRECTOR
MORGANTOWN

Small Grain Variety Trials In West Virginia, 1959-65

COLLINS VEATCH

SMALL GRAIN acreage has been declining in West Virginia in recent years although production per acre has generally been increasing. According to the West Virginia Crop Reporting Service, "The 1965 wheat production totaled 551,000 bushels, 2 percent more than the 1964 crop of 540,000 bushels but 3 percent below the 1959-63 average of 566,000 bushels. Oats production of 702,000 bushels is 2 percent less than the 720,000 bushels produced in 1964 and 31 percent less than the average production of 1,011,000 bushels. The 369,000 bushels of barley produced in 1965 is 5 percent above a year earlier, and 1,000 bushels above the average. The acreages of wheat and oats harvested were less than in 1964 while barley acreage was the same. Yields of all three crops were higher than in 1964."¹

New crop varieties are continually being produced to provide improved quality, increased yield and resistance to disease and pests. This bulletin presents the comparative performance of new varieties under West Virginia conditions.

Materials and Methods

The small grain yields reported here were calculated from the rod row trials grown at four locations:

Agr. Experiment Farms	Soil Type	Elevation (feet)
Point Pleasant	Wheeling sand loam	700
Morgantown	Rayne silt loam	1,200
Reedsville	Monongahela silt loam	1,800
Wardensville	Monongahela silt loam	950

Each variety was grown in 3-row plots 18 feet long, one foot between rows, with 4 replications. Sixteen feet of the center row was harvested and threshed to determine the comparative yield of wheat and barley. A 15-foot section was used for oats.

¹Annual Crop Summary 1965, December 22, 1965. West Virginia Crop Reporting Service, West Virginia Department of Agriculture, Charleston, West Virginia.

The varieties are arranged in the tables in order according to the average yields in 1965. In these trials the low-yielding varieties are discontinued and new strains are added from year to year.

Duncan's Multiple Range test was used to compare the yields within locations. Yields followed by the same letter are not significantly different. Yields, in bushels per acre, are reported for the 1965 trials and the average yields for the indicated number of years for varieties that have been under test for some time.

SPRING OATS 1961-1965

In acreage and value, oats are second to wheat among the small grains in West Virginia. According to the 1959 census some oats are produced in 54 of the State's 55 counties. Although not a high-value crop, oats fit well in rotations where winter grains cannot conveniently be seeded after corn. In most cases it serves as a companion crop for grass and legume seedlings for forage.

The last report on the oat variety trials was published in 1960.² This bulletin gives the 1965 results and summarizes the oat variety tests for the past five years.

The 1965 oat yields at three locations are reported in Table 1. The oat plots were not harvested at Morgantown in 1965 due to severe bird damage. Several unnamed selections designated by Cereal Investigation (C.I.) numbers taken from the high-yielding strains in the Uniform Mid-season Oat Performance Nursery were included in this year's trial. Some of them were high in yield and give promise for future use.

The line below Clintland 60 in Table 1 divides the varieties into two groups, those above the line were grown at three locations, those below at only two locations. The highest-yielding varieties for 1965 were Orbit at Reedsburg, Garry Improved at Point Pleasant, and a Michigan selection at Wardensville.

The average yields of oat varieties that have been under test since 1960 at the four locations are reported in Table 2. Aside from the Bingham selections these are all named varieties. There was considerable variation in performance of varieties with respect to location. Shelby has been the highest-yielding variety at Point Pleasant, although it was significantly better than only one variety, Clintland 60. At Morgantown one of the Bingham selections (7592) was high with 72.2 bu. per acre, but it was significantly better than only one variety, Andrew. At Reedsburg, Ajax, with a yield of 75.1 bu. per acre, was high but not significantly better than any others in the trial. The Bingham selection 7588 was high at Wardensville.

²Veatch, Collins, *Spring Oat Variety Trials in West Virginia, 1952-1960*, W. Va. Univ. Agr. Exp. Sta. Bull. 458, June, 1961.

TABLE 1
Oat Yields, 1965

Variety	C.I. No.	1965		Point Pleasant (bu./A)	Morgantown (bu./A)	Reedsville (bu./A)	Wardensville (bu./A)
		Average (bu./A)	7988				
Wisc. x 697-3	7988	48.5	50.1	a-f*	70.4	a,b	24.9
Orbit	7811	48.1	49.0	a-f	76.6	a	18.7
Garry (Imp.)	6662	46.3	58.1	a	63.0	a-c	17.7
Mich. 56-26 3232-2	7987	43.8	45.1	a-f	60.1	a-d	26.3
Mo. 0-205	4988	43.6	43.5	b-f	65.8	a-c	21.4
Shelby	4372	43.4	55.2	a-d	54.8	b-d	20.3
Garry x Craig	8070	43.4	47.1	a-f	67.1	a,b	16.0
Minn. II-54-22	7983	43.0	49.2	a-f	65.6	a-c	14.3
Ajax	4157	42.3	48.4	a-f	58.9	a-d	19.7
Or	7591	42.2	56.3	a,b	50.3	b-d	20.1
Bingham Sel.	7571	41.7	52.9	a-e	54.8	b-d	17.4
Bingham Sel.	7670	41.0	47.0	a-f	56.0	a-d	20.0
Au Sable							
NDO 64-11	8084	40.8	45.5	a-f	61.7	a-c	15.3
Clarion	5647	39.2	38.8	f	63.8	a-e	14.9
Rodney	6661	39.0	42.2	e-f	57.5	a-d	17.2
Andrew	4170	38.6	40.9	e,f	51.8	b-d	23.0
Bingham Sel.	7588	37.6	51.6	a-f	39.4	d	21.8
Clintland 60	7234	31.8	25.9	g	54.4	b-d	15.1
Bingham Sel.	7592	50.3	55.6	a-e	45.0	c,d	
Brace	7690	50.3	46.1	a-f	54.5	b-d	
Bingham Sel.	7593	48.0	42.0	d-f	53.9	b-d	
Carry x Mo. 0-205	8071	52.5	38.1	f	66.8	a-c	

No yields taken (bird damage)

No significant differences

*Yields followed by the same letter are not significantly different.
Comparisons are valid only between yields at the same location.

TABLE 2
Oat Yields, 1961-1965

Variety	C.I. No.	Point Pleasant		Morgantown		Reedsville		Wardensville 5 years 1961-1965 (bu./A)
		4 yrs. 1961, 1963-1965	(bu./A)	3 years 1962-1964	(bu./A)	4 years, 1961 1963-1965	(bu./A)	
Garry (Imp)	6662	53.7	a,b*	66.3	a,b	60.1		47.4
Missouri 0-205	4988	52.2	a,b	56.8	a,b	67.8		45.3
Shelby	4372	56.7	a	56.7	a,b	66.2		41.1
Ajax	4157	54.9	a,b	67.5	a,b	75.1 73.4		46.7
Bingham Sel.	7591	51.1	a,b	66.7	a,b	75.0		46.6
Bingham Sel.	7571	46.5	a,b	60.0	a,b	66.4		46.0
Clarion	5647	50.8	a,b	65.6	a,b	72.8		a,b
Rodney	6661	48.1	a,b	49.6	a,b	39.4		
Andrew	4170	55.8	a,b	69.2	a,b	56.6		47.6
Bingham Sel.	7588	51.9	a,b	54.6	a,b	61.8		50.4
Clintland 60	7234	42.0	b	72.2	a	58.8		31.3
Bingham Sel.	7592	54.5	a,b	64.7	a,b	71.9		b
Bingham Sel.	7593	54.3	a,b	60.8	a,b	71.2		
Bingham Sel.	7578							

No significant differences

*Yields followed by the same letter are not significantly different.
Comparisons are valid only between yields at the same location.

The varieties of Canadian or northern U. S. origin such as Ajax and Garry generally produce better at Reedsville, while varieties such as Shelby, Mo. 0-205, and Clarion seem to be better adapted to the other locations.

WINTER BARLEY

Winter barley has never been extensively grown in West Virginia probably because wheat is a preferred crop. The acreage of winter barley has been decreasing in recent years in line with a general decrease in crop acreage. The 1965 preliminary crop summary reports 9,000 acres grown with an average production of 41 bu. per acre.

Variety tests have been conducted for many years with winter barley. The last report on the West Virginia trials was published August, 1956,³ aside from mimeographed annual summaries. This bulletin gives the yields for 1965 (Table 3) and summarizes the results since 1955 (Table 4).

The 1965 barley yields were good at all locations considering the season. The highest yields were recorded at Wardensville. A Virginia selection, 59-37-3, gave the highest yield at Morgantown and Wardensville. Pennrad was the highest producing named variety, closely followed by Dayton. Kenbar, Will, and Hudson were somewhat lower in yield. The effect of location was apparent since several varieties such as Dayton, Rogers, and Duchess produced well at the other locations but were quite low at Point Pleasant.

The summary of yields from 1956-1965 primarily indicates that we have been successful in eliminating poor-yielding strains and should expect good yields from any of those included with the possible exception of Kentucky #1, the long-time check, seed of which has not been available for some time. Wong has largely been replaced by Kenbar or Hudson and now by Dayton. Rogers is not as winter hardy as the other varieties; otherwise it yielded with the best.

WINTER WHEAT

The soft red winter wheats are grown primarily as a feed crop and fit well into a common rotation where a fall-sown grain follows corn. They give a good winter cover and, if early enough, may provide some fall or early spring grazing.

³Veatch, Collins, *Winter Barley Variety Trials in West Virginia: 1949-1955*, W. Va. Univ. Agr. Exp. Sta. Bull. 392, August, 1956.

TABLE 3
Winter Barley Yields, 1965

Variety	C.I. No.	1965		Morgantown (bu./A)	Reedsville (bu./A)	Wardensville (bu./A)
		Average (bu./A)	Point Pleasant (bu./A)			
Va. 59-37-3	106558	61.4	a*	50.7	a-c	51.1
Pennrad	11170	58.0	ab	53.8	a-c	48.9
Dayton	9517	56.0	ab	37.1	c-e	50.8
Stillwater 571820	10879	55.5	ab	56.5	a-	53.3
Kenbar	7574	55.3	ab	38.5	c-e	49.2
Mo. B1210	10898	54.9	ab	49.3	a-c	51.9
∞ Sel. B61-16	54.8	ab	38.5	c-e	56.8	42.8
Will	11652	53.0	ab	47.9	a-c	51.0
Hudson	8067	51.6	ab	41.5	b-d	48.5
Sel. 1-45-22	7582	50.3	ab	47.0	a-c	50.2
Sel. 61-4	50.0	ab	40.2	b-e	50.2	49.8
Rogers	9174	49.0	ab	39.6	b-c	46.0
Duchess	10890	47.6	ab	26.0	e	54.8
Wong	6728	47.3	ab	47.2	a-c	45.8
Kentucky #1	6050	45.7	ab	30.3	d,e	49.0
O.A.C. W.B. 211	11174	40.1	b	44.8	a-c	39.4

*Yields followed by the same letter are not significantly different.
Comparisons are valid only between yields at the same location.

TABLE 4
Winter Barley Yields, 1956-1965

Variety	C.I. No.	Point Pleasant		Morgantown		Reedsville		Wardensville			
		Years Tested	(bu./A)	Years Tested	(bu./A)	Years Tested	(bu./A)	Years Tested	(bu./A)		
Va. 59-37-3	10658	5	53.1	a,b*	3	48.6	4	47.6	5	54.2	a
Dayton	9517	10	53.3	a	9	52.4	4	48.3	10	46.4	a-c
Kenbar	7574	10	43.2	b,c	9	54.0	8	44.5	10	44.1	b,c
Hudson	8067	10	47.2	a-c	9	49.3	8	44.6	10	47.9	a-c
Sel. 1-45-22	7582	10	45.2	a-c	9	50.9	8	41.4	10	42.4	b,c
Rogers	9174	10	48.4	a,b	9	49.9	4	46.9	10	49.4	a,b
Wong	6728	10	47.0	a-c	9	48.4	8	39.0	10	44.6	b,c
Kentucky #1	6050	10	38.3	c	9	49.1	8	40.7	10	40.6	c

*Yields followed by the same letter are not significantly different.
Comparisons are valid only between yields at the same location.

Variety testing of winter wheat has been part of the Agricultural Experiment Station program for many years. The last official report was published in May, 1955.⁴ This bulletin covers the period from 1955 through 1965.

The variety yields for 1965 at four locations are reported in Table 5. This table contains several as yet unnamed selections, some of which may prove useful in the future; however, at present we are primarily concerned with the named varieties. Dual was the high-producing variety in 1965 at Morgantown and in the trials as a whole. Redcoat was almost equal to Dual. Reed out-yielded Butler at Reedsville and Wardensville. Thorne and Seneca were still within the yield range of the better varieties at Morgantown and Reedsville.

A summary of the yields of varieties that have been under test for over three years is given in Table 6. Dual has consistently been a good producing variety. While Redcoat has not been under test as long as Dual, it is consistently good at Reedsville and Wardensville. Butler has consistently been one of the better varieties at Point Pleasant. Thorne and Seneca are old standby varieties that have been largely superseded by new varieties.

⁴Veatch, Collins, *Winter Wheat Variety Trials in West Virginia, 1949-1954*, W. Va. Agr. Exp. Sta. Bull. 374, May, 1955.

TABLE 5
Winter Wheat Yields, 1965

Variety	C.I. No.	1965			Morgantown (bu./A)	Reedsville (bu./A)	Wardensville (bu./A)
		Average (bu./A)	Point Pleasant (bu./A)	b,c*			
Dual	13083	42.0	31.8	b,c*	50.4	a	39.2
Pur. 5211B7-12-3-1	13785	41.6	37.6	a,b	47.0	a,d	33.7
Redcoat	13170	41.2	32.7	b,c	39.9	b-d	40.8
W-7140	13895	40.7	29.7	c,d	45.9	a-c	30.7
Pur. 5157-10-2-10	13892	39.7	28.4	c,d	39.5	b-d	36.1
Va. 55-16-23	13351	38.8	26.3	c-e	39.8	b-d	40.7
Reed	13513	38.3	23.9	c-f	41.5	a-d	37.9
Butler	12527	37.9	40.4	a	42.6	a-d	27.6
TN-1369	13709	37.7	25.9	c-e	38.9	b-d	34.1
W-6811	13788	37.4	32.3	b,c	45.6	a-d	23.8
Senecca	12529	36.6	18.6	e,f	45.3	a-d	38.4
Thorne	11856	35.5	16.8	f	43.7	a-d	32.4
Pur. 52115R6-4-11	13894	34.5	19.6	d-f	43.9	a-d	26.4
F.S.F.E.A2-1-57-16	13768	34.2	16.9	f	35.1	d	36.1
T.N.-1381	13899	33.7	17.0	f	38.3	b-d	35.7

*Yields followed by the same letter are not significantly different.
Comparisons are valid only between yields at the same location.

TABLE 6
Winter Wheat Yields, 1955-1965

Variety	C.I. No.	Point Pleasant		Morgantown		Reedsville		Morgantown	
		Years Tested	(bu./A)	Years Tested	(bu./A)	Years Tested	(bu./A)	Years Tested	(bu./A)
Dual	13083	10	28.9	10	40.9	11	30.5	11	32.3
Redcoat	13170	5	27.4	6	39.9	7	32.0	4	35.4
Va. 55-16-23	13351	5	27.3	6	40.1	7	31.6	4	35.8
No significant differences									
Reed	13513	5	26.9					4	36.6
Butler	12527	10	30.8	10	37.7	11	24.6	11	27.7
No significant differences									
Seneca	12529	10	27.5	10	37.5	11	28.0	11	30.8
Thorne	11856	10	26.2	10	37.0	11	27.0	11	30.6
a,b									

*Yields followed by the same letter are not significantly different.
Comparisons are valid only between yields at the same location.

Summary

Small grain acreage has been decreasing in West Virginia in recent years as has acreage under cultivation. However, there is still an important place for such crops in that they provide feed and companion crops for the establishment of forage crops. If properly managed they may provide early spring and late fall grazing in addition to the feed they provide as grain.

Recommended Varieties

SPRING OATS

Point Pleasant	Morgantown	Reedsville	Wardensville
Shelby	Mo. 0-205	Ajax	Mo. 0-205
Andrew	Ajax	Garry (Improved)	Andrew
Ajax	Rodney	Mo. 0-205	Clarion
Garry (Improved)	Clarion	Clarion	Shelby
Clarion	Shelby	Shelby	
Rodney			

WINTER BARLEY

Pennrad	Dayton	Dayton	Dayton
Hudson	Kenbar		Pennrad
Rogers	Rogers	Kenbar	Kenbar
Dayton	Hudson	Hudson	Rogers

WINTER WHEAT

Butler	Dual	Redcoat	Redcoat
Dual	Redcoat	Dual	Dual
Redcoat	Seneca	Seneca	Seneca
Seneca			

